In the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. - 52. (Canceled).

53. (Previously Presented): A computer-implemented method for providing a prediction of an output of a plant, comprising the steps of:

providing a dynamic model that represents the dynamics of the plant;

providing a steady state model that represents the steady state operation of the plant over the input space; and

parameterizing the operation of the dynamic model with the steady state model over the input space to minimize errors in the operation of the dynamic model when operating over the input space.

54. (Previously Presented): The computer-implemented method of Claim 53, wherein the steady state model represents the operation of the plant over substantially all of the operating input space of the plant.

55. (Previously Presented): The computer-implemented method of Claim 53, wherein the dynamic model has a gain k and the step of parameterizing is operable to paramterize the operation of the dynamic model over the input space by varying the gain k thereof.

56. (Previously Presented): The computer-implemented method of Claim 55, wherein the steady state model has a gain K, wherein the step of parameterizing is operable to parameterize the operation of the dynamic model by varying the gain k thereof in proportion to the gain K of the steady state model.

57. (Previously Presented): The computer-implemented method of Claim 55, wherein the unparameterized gain k of the dynamic model is valid in only a portion of the input space.

58. (Previously Presented): The computer-implemented method of Claim 55, wherein the dynamic model represents the dynamic response of the plant over substantially all of the input space, with only the gain k of the dynamic model validly represented over the portion of the input space.

59. (Previously Presented): The computer-implemented method of Claim 53, and further comprising the steps of:

receiving a current input value to the plant and a desired output value for the plant and predicting a plurality of input values over a time horizon to define a dynamic operation path of the plant between the current output value and the desired output value over the time horizon; and

the step of parameterizing comprising optimizing the operation of the dynamic model at each of the different time positions over the time horizon in accordance with a predetermined optimization method that optimizes the predetermined optimization objectives to achieve a desired path over the time horizon.

60. (Previously Presented): The computer-implemented method of Claim 59, wherein the step of providing the dynamic model comprises the steps of:

providing a dynamic forward model operable to receive input values over the time horizon at each of the plurality of time positions and map the received input values through a stored representation of the plant to provide a predicted dynamic output value.

61. (Currently Amended): The computer-implemented method of Claim 60, wherein the step of optimizing comprises:

comparing in an error generator the predicted dynamic output value to the desired output value and generating a primary error value as the difference therebetween for each of the time positions;

minimizing the primary error value output by the error generator with an error minimization device in order to determine a change in the input value;

summing with a summation device the determined input change value with the ~~Previously Presented~~ original input value for each time position to provide a future input value; and

controlling the operation of the error minimization device to operate under control of the step of optimizing to minimize the primary error value in accordance with the predetermined optimization method.

62. (Previously Presented): An optimizer for optimizing the operation of a plant, comprising:

a dynamic model of the plant that represents the dynamics of the plant over the input space;

an input device for inputting to said dynamic model inputs to the plant;

a controller for optimizing the dynamic operation of the plant utilizing the dynamic model to predict optimized destination input values u_f when moving from a present input value u_i to the destination input value u_f; and

a parameterizer for parameterizing the dynamic model and the operation thereof at the destination value u_f.

63. (Previously Presented): The optimizer of Claim 62, wherein said parameterizer includes:

a steady state model that represents the steady state operation of the plant over the input space;

said steady state model determining the final steady state value as the destination value u_f; and

said parameterizer parameterizing the operation of the dynamic model on the operation thereof at the destination final steady state value.

64. (Previously Presented): The optimizer of Claim 62, wherein the destination value u_f is a steady state value.

65. (Previously Presented): The optimizer of Claim 64 wherein said parameterizer is operable to determine the steady state value with a steady state model of the plant.

66. (Previously Presented): A computer-implemented method for defining a model of a plant, comprising the steps of:

providing a dynamic model having a set of operating parameters valid in a first portion of an input space, wherein the parameters thereof are variable;

providing a steady state optimizer;

defining a steady state input value with the steady state optimizer for a given desired output value; and

varying the parameters of the dynamic model as a function of the defined steady state input value;

wherein the operation of the dynamic model is parameterized with the steady state model over the input space to minimize errors in the operation of the dynamic model when operating over the input space, and the dynamic model has a gain k and the step of parameterizing is operable to parameterize the operation of the dynamic model over the input space by varying the gain k thereof.

67. (Previously Presented): The computer-implemented method of Claim 66, and further comprising the step of predicting a dynamic move from an originating point in the first portion in the input space to a point in the input space corresponding to the defined input value.

68. (Previously Presented): The computer-implemented method of Claim 66, wherein the step of defining a steady state input value with the steady state optimizer includes the step of processing input values through a steady state model, the steady state model representing the operation of the plant over substantially all of the operating input space of the plant.

69. (Canceled)

70. (Previously Presented): The computer-implemented method of Claim 66, wherein the steady state model has a gain K, wherein the step of parameterizing is operable to parameterize the operation of the dynamic model by varying the gain k thereof in proportion to the gain K of the steady state model.

71. (Previously Presented): The computer-implemented method of Claim 66, wherein the unparameterized gain k of the dynamic model is valid in only a portion of the input space.

72. (Previously Presented): The computer-implemented method of Claim 66, wherein the dynamic model represents the dynamic response of the plant over substantially all of the input space, with only the gain k of the dynamic model validly represented over the portion of the input space.

73. (Previously Presented): A computer-implemented method for building a model, comprising the steps of:

providing a dynamic model;

parameterizing the dynamic model based upon a move from a first portion of the input space to a second portion thereof and as a function of the final point in the input space.

74. (Previously Presented): The computer-implemented method of Claim 73, wherein the step of parameterizing comprises the steps of:

providing a steady state optimizer;

determining with the steady state optimizer an optimized input value for a desired output value; and

parameterizing the operation of the dynamic model based on the determined input value;

wherein the operation of the dynamic model is parameterized with the steady state model in the step of parameterizing over the input space to minimize errors in the operation of the dynamic model when operating over the input space, and the dynamic model has a gain k and the step of parameterizing is operable to parameterize the operation of the dynamic model over the input space by varying the gain k thereof.

75. (Previously Presented): The computer-implemented method of Claim 74, wherein the step of determining with the steady state optimizer an optimized input value for a desired output value includes the step of processing input values through a steady state model, the steady state model representing the operation of the plant over substantially all of the operating input space of the plant.

76. (Canceled)

78. (Previously Presented): The computer-implemented method of Claim 74, wherein the steady state model has a gain K, and wherein the step of parameterizing is operable to parameterize the operation of the dynamic model by varying the gain k thereof in proportion to the gain K of the steady state model.

79. (Previously Presented): The computer-implemented method of Claim 74, wherein the unparameterized gain k of the dynamic model is valid in only a portion of the input space.

80. (Previously Presented): The computer-implemented method of Claim 74, wherein the dynamic model represents the dynamic response of the plant over substantially all of the input space, with only the gain k of the dynamic model validly represented over the portion of the input space.